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"Kossinna's Smile"

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“Kossinna’s Smile”

One might eventually look back at June 2015 as a turning point for all archaeologists dealing with the 3rd millennium BCE and the c.30 centuries thereafter. That month, two ancient DNA (aDNA) papers were published in the prestigious scientific journal *Nature* (Allentoft *et al.* 2015; Haak *et al.* 2015), having far-reaching implications for our understanding of the Later Prehistory of Europe and Western Asia. Partly based on results of two previous studies, published one/two years earlier (Brandt *et al.* 2013; Lazarides *et al.* 2014), one can summarize their quintessence in five messages:

1. The discovery of the third major ancestral group of all modern European populations besides the earlier ‘Western Hunter-Gatherers’ and ‘Early Neolithic Near Eastern farmers’. Importantly, this “...ancestry is lower in southern Europe and higher in northern Europe” where more than 50% of the current inhabitants of Norway, Lithuania and Estonia have it (Haak *et al.* 2015, p.210, and fig. 3).
2. This third ancestral group derives from the Eurasian steppe belt and is bound to the westward movement of Yamnaya populations, dated to c.3000 BCE (stated by both articles).
3. Genetic transmission goes from steppe Yamnaya directly to the east/central/north European Corded Ware/Single Grave/Battle Axe Complex (henceforth CWC) in a way that “Late Neolithic CWC people from Eastern Germany traced 75% of their ancestry to the Yamnaya,...” (Haak *et al.* 2015, abstract).
4. Highlighting *Migrations* as an important driver for our understanding of the 3rd millennium BCE and prehistoric Europe as a whole by stating “...a highly dynamic period involving large-scale population migrations and replacements,...” (Allentoft *et al.* 2015, abstract).
5. Emphasising the link of these findings to the background and dating of the spread of Indo-European languages (stated by both articles).

Several further articles, published in the months thereafter partly based on the same genetic data, supplement the picture. They demonstrate that: (6) the plague (*Yersinia pestis*) is not only a disease of Late Antiquity and the Medieval period but a prehistoric disease to which humans have succumbed already in the 3rd millennium

BCE (Rasmussen *et al.* 2015), and it stems from the Eurasian steppes being also connected to the Yamnaya and CWC; (7) Yamnaya peoples have the highest ever calculated genetic selection for stature (Mathieson *et al.* 2015), a biological property also positively confirmed in the bio-anthropological record of the 4th and 3rd millennium BCE (Rosenstock *et al.* 2016); (8) they are fair-skinned but have dark eye colours (also confirmed in Allentoft *et al.* 2015); blue eyes can be seen more often in the CWC, while for all, contrary to predictions, the lactase persistence mutation is not yet to be found. How fundamental changes were in 3rd millennium BCE Europe is (9) highlighted by an aDNA study from Ireland –not the most central spot in the cultural triangle of ‘Yamnaya–CWC–Bell Beakers’; it presents proof of a profound genetic break, happening in the 3rd millennium BCE and bringing burials dated to after this threshold much closer to nowadays Irish population (Cassidy *et al.* 2016). This is seconded (10) by findings of Poznik *et al.* (2016) showing “bursts of extreme expansion in male numbers” calculated for “4.8 and 5.5kya”, thus fitting nicely and giving a masculine spin to the character of events.

These are indeed great results, being assembled only within a short span of time and certainly not the last of its kind. They have the potential to offer solutions for some of the most pertinent questions in Later Prehistory, disputed for decades. Leaving aside the pure genetic results, and those we barely can test within archaeology alone, several powerful archaeological messages are laid out to which one can perfectly agree as a Prehistorian: Yes, there is something coming out of the Eurasian steppes and we can track this westward movement of Yamnaya in the records; yes, there certainly is a burial link between Yamnaya and CWC (Kristiansen *et al.* 2017 in this volume), and likely also including Bell Beaker users (Harrison & Heyd 2007; Heyd 2016); and yes, there is a huge geographical reach of these fundamental changes, from the Altai to the Atlantic. On another level, one will also have to live with the existence of large-scale prehistoric migrations, the fact that they are a driving force of cultural change, and that there is a link to the Indo-European languages which in turn makes the late dispersal theory (Anthony & Ringe 2015; Kristiansen *et al.* 2017 in this volume) much more likely than the supposed connection with early farming. In another consequence, and a further elevated level, *culture-history* and ethnic interpretations are back on the dinner table.

So, it is all that simple? If that simple why have we archaeologists not seen these things much earlier? Perhaps, because one could also address critique for the results? Critique, for example, regarding the low numbers of Yamnaya and CWC aDNA hits, their regional constraints, the flawed selection of samples, and other discrepancies: (1) In the Haak *et al.* paper only from Samara oblast in Russia (seven sites) and Saxony-Anhalt land in Germany (only site of Esperstedt), and in the Allentoft *et al.* paper more later sites than the 11 (4 x Yamnaya, 2 x Afanasievo, and 5 x CWC) dated to the first half of the 3rd millennium BCE, of those the Yamnaya sites are again only coming from a single Russian region (Kalmykia); or (2) inconsistencies that the 'Corded Ware' graves from Esperstedt are that late in their radiocarbon dates that three (features 6216, 6233 & 6216, with dates of 2473-2348, 2454-2291, and 2454-2291 calBCE respectively) out of the four might have already experienced another aDNA merging, namely that with incoming Bell Beaker users; or (3) that 5% of Yamnaya ancestry is assigned to the Iceman while he lived 200±100ya earlier than the arrival of Yamnaya people in steppe southeast Europe (Frînculeasa *et al.* 2015); or (4) because of the problem of describing in *Nature* a complex archaeological situation within 1,500 words (for a *Letter*) only, making statements automatically short and pronounced, and with a tendency of being culture-historical; or (5) because of the more fundamental and dangerous problem of translating the results of a handful of individual burials into whole ethnically interpreted populations? Kossinna already sends greetings...

Gustaf Kossinna (1859-1931) is indeed the natural keyword here, the messages coming out of these high-flying scientific papers strongly remind any Prehistorian of his '*Siedlungsarchäologische Methode*', developed in the 1910s (Kossinna 1911). Therein he proposes not only an *ethnic identification* to archaeological culture but he also equals artefact distribution boundaries with ethnicity and linguistic coverage. Leaving aside the later political and ideological use and misuse, it has rightly found criticism (e.g. Klejn 2006) in its simplicity of both ethnic and cultural concepts, while being rigid in its application (*unbedingt* – 'unconditional'), and in its lack of proper definitions overall, being concurrently both autochtonist and migrationist. Yet, it would be too simple to ignore all aDNA results,

turn our backs on their messages, or hide behind an *Anti-Kossinnian* firewall. No doubt, the aDNA results force us to re-consider; to question our own records and the methodology we apply (Müller 2013); and to re-focus our interpretations. But nevertheless, while we have known for decades about the special relationship between Yamnaya and CWC, for anyone working in the 3rd millennium BCE, it is obvious that neither a one-to-one translation from Yamnaya to CWC, nor even the 75:25 ratio as claimed, simply fits the archaeological record. This is because three aspects in the archaeological-genetic relationship of Yamnaya to CWC can only be discussed away with great difficulties: 1) Yamnaya and CWC generally represent the inhabitants of different ecozones, that is steppe habitat versus forested temperate Europe, and there is not a single burial in the records having vice-versa transgressed this border. 2) The beginnings of both, Yamnaya and CWC, show a chronological offset of some 200 years, c.3050/3000 BCE versus c.2850/2800 BCE (Frînculeasa *et al.* 2015; Włodarczak 2014). 3) While very similar at first glance, the burials, by far our most prolific source of both Yamnaya and CWC and the respective human beings, are simply more different than identical in both their fundamental messages of rituals and equipment rules, as well as material culture (Furholt 2014; Frînculeasa *et al.* 2015).

If it is that difficult to archaeologically prove the easy translation from Yamnaya to CWC, then there might perhaps be alternative or supplementary scenarios that fit the records. Starting points for such do indeed exist and can be summarized under terms of *Time* and *Scale*:

2000 Years of Interaction (Figure 1)

Instead of solely favouring one genetic transmission from Yamnaya to CWC, and despite a handful of Yamnaya and/or Middle Dnieper/CWC graves along the steppe/forest-steppe border in Moldova and the Ukraine having a sort of mixed inventories (Telegin 2005; Włodarczak 2014), it is much more convincing in terms of the archaeological realities to also include the previous centuries and argue for a long-term and incremental build-up between steppe and temperate European populations, particularly because CWC is only partially contemporaneous with Yamnaya. Yet along the rivers Prut, Dnester, the two Bug, and the San it is the Globular Amphora Culture that for two/three centuries goes parallel with Yamnaya,

proved by many mutual exchanges (Szmyt 2013). Their role in the transmission is not emphasized; their peoples are not even mentioned in the aDNA papers. But throughout the 4th millennium BCE, we see in the records, both north and south of the Carpathian arc, close interrelationships of pre-Yamnaya societies of the steppe belt with 'inhabitant' cultures or those whose ancestors were already in earlier exchanges with steppe societies (Frînculeasa *et al.* 2015). Likewise do we find round barrows with individual burials within them in the Baalberge culture of eastern Germany from c.3700 BCE and early horse bones/skull in the same (site of Alsleben) and slightly later Salzmünde culture –by the way this is the same region from where the genotyped CWC graves of Esperstedt come from– as we do have horse bones in 4th millennium BCE sites of the Czech Republic and Hungary. This interaction between the steppe and the southeast European 'sown' goes back as far as the 5th millennium BCE when incorporating graves of the Suvorovo-Novodanilovka tradition and argues for their inspiration in related artefacts, such as horse-head stone sceptres, and local burial customs (Anthony & Ringe 2015; Heyd 2016).

A Europe-wide Horizon of Change

Again, instead of only highlighting the few centuries of contact between Yamnaya and CWC and an immediate border zone transmission (Figure 2), it is archaeologically more sensible to consider the third millennium BCE and Europe as a whole. Consequently the Bell Beakers of Europe's western half should unconditionally be included, as they are potentially part of the gene analyses through the graves of Esperstedt. Likewise, recent dates for their emergence on the Iberian Peninsula (c.28-2700 BCE; Cardoso 2014) are very close to earliest CWC dendrodates in eastern Switzerland, namely 2725 BCE. This is in no way an accident, in the same way than Cassidy *et al.* 2016 have demonstrated in their Irish study, that we are dealing with much more profound and far-fledged turbulences. Something is dramatically changing at a Continental scale in the late 4th/early 3rd millennium BCE: The Europe-wide emergence of anthropomorphic stelae, including France and Iberia, are one sign; the new flint and copper daggers, and occasional hammer-axes, in the west are a second; and the associated graves of men being emblazoned with such a weapon, the warrior, is a third (Harrison & Heyd 2007; Heyd 2016). Most revealing in this is the recently discovered funeral complex –structure

10.042-10.049– of paramount status in the PP4-Montelirio sector of the monumental settlement of Valencina de la Concepción, deep in the Iberian south (Seville; Garcia Sanjuán *et al.* [ed.] 2013). Would the combination of a 2875-2700 calBCE dating, large barrow, burial chamber, individual right-side crouched male, (head)east-west-orientation, flint dagger and staining with red cinnabar pigment for it alone not already be sufficient of a strong reminiscence on Yamnaya/CWC graves ([Figure 3](#)), it is the upper part of the chamber itself and the immediate surroundings (PP4 10.029; 80m away) that offer two further significant artefacts: A long-oval African ivory 'plate' and a decorated golden sheet, respectively, both in form of 'sandals' (Murillo-Barroso *et al.* 2015: 588-589). Further such sandals, sandal soles, or sandal-shaped idols as they are also called, made of ivory, bone or limestone are recorded from four other sites in the Iberian south, all being key sites of the Chalcolithic dated to the first half of the 3rd millennium BCE. These are quite neat features/artefacts, however do not matter that much if the contemporary Europe-wide context between west and east would not have something really extraordinary in its warehouse shelves: foot-print/shoe/sandal-formed engravings on contemporary Yamnaya/kurgan stelae from the Ukraine (Telegin & Mallory 1994), carved and erected some 4500 km away ([Figure 4](#)). Sandals are widely seen as symbolically loaded, with most interpretations (eg. Mallory & Adams [ed.] 1997) ranging from signs of status, power and property to explanations of –in the context of burials– walking out of the tomb and linking to the underworld in case of facing downwards. Whatever the symbolism we may only partly comprehend, it is just one perfect example of the pan-European interconnectivity in the early 3rd millennium BCE, centuries before the Bell Beakers expansion dating to 2500 BCE. This is what really matters and not the simple genetic transmission from Yamnaya to CWC.

Simple solutions for complex problems are never the best choice, even when politicians and media favour them. Kossinna also offered a simple solution for a complex prehistoric problem, and failed therein. Prehistoric Archaeology has been aware of this for a century and has drawn its conclusions in becoming more differentiated and nuanced, working anthropologically, scientifically and across disciplines (cf. Müller 2013; Kristiansen 2014), and rejecting mono-causal explanations. The two aDNA papers in *Nature*, as powerful and promising they are

for our future understanding, also offer rather straightforward messages, heavily pulled by culture-history and the equation of people and culture, admittedly partly due to the restrictions of the medium that transports them (and despite the often relevant additional information given in SI, unfortunately not always recognized as such). While I have no doubt they are basically right, it is the complexity of the past that is not reflected. Herein should archaeology, and the archaeologists contributing to aDNA studies not only by handing over the samples and advising on chronology, find its role: Instead of letting the geneticists determine the agenda and set the messages, we should teach them about complexity in past human actions and interactions. If accepted, this could be the starting point of a marriage set in heaven, with the blessing smiles of Gustaf Kossinna, and no doubt also Vere Gordon Childe, would they still be alive, as a reconciliation of 20th and 21st century approaches. For us Archaeologists, such could also be the starting point to look out for another level of a *New Archaeology*.

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Captions

Figure 1. Steppe links with temperate Europe prior to CWC; top: Yamnaya and Globular Amphora (after Szmyt 2013); bottom: Pre-Yamnaya graves in Romania and Bulgaria (after Frînculeasa *et al.* 2015).

Figure 2. Various potential routes of transmission from Yamnaya to CWC.

Figure 3. The burial of Valencina de la Concepción, PP4-Montelirio, structure 10.049 compared to Yamnaya/CWC graves in Romania and Austria (after García Sanjuán *et al.* [ed.] 2013, Frînculeasa *et al.* 2015 and Neugebauer 1987).

Figure 4. SANDALS/shoe representations from the Iberian Chalcolithic (top) and on Yamnaya stelae from the Ukraine (bottom) (after Murillo Barroso *et al.* 2015 [with further Iberian references on ‘sandals’] & Telegin & Mallory 1994).

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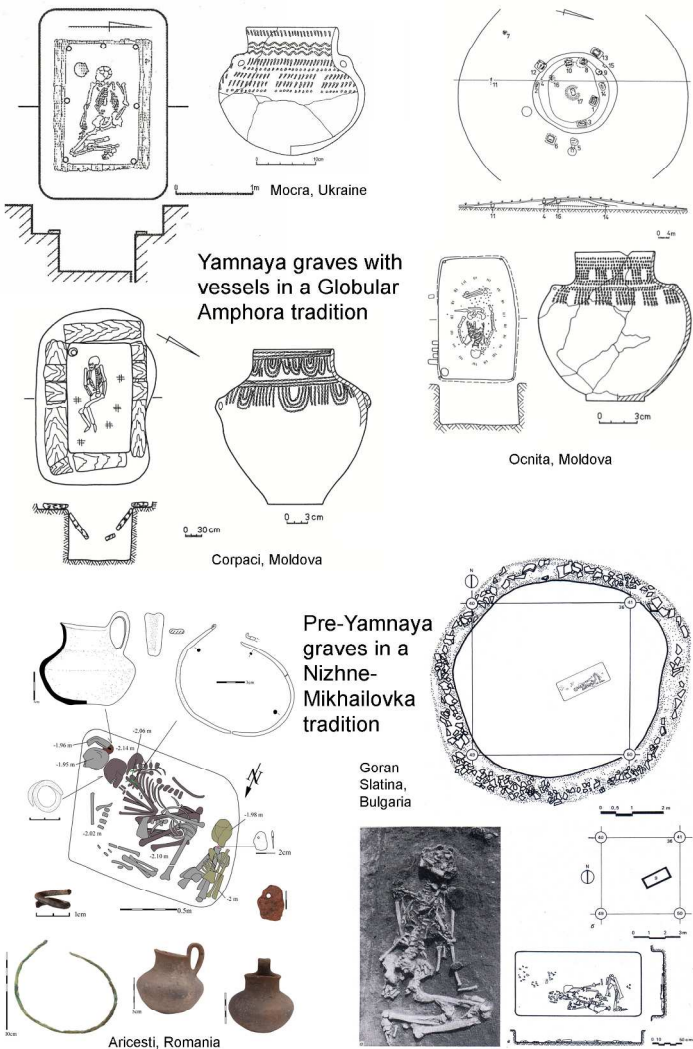


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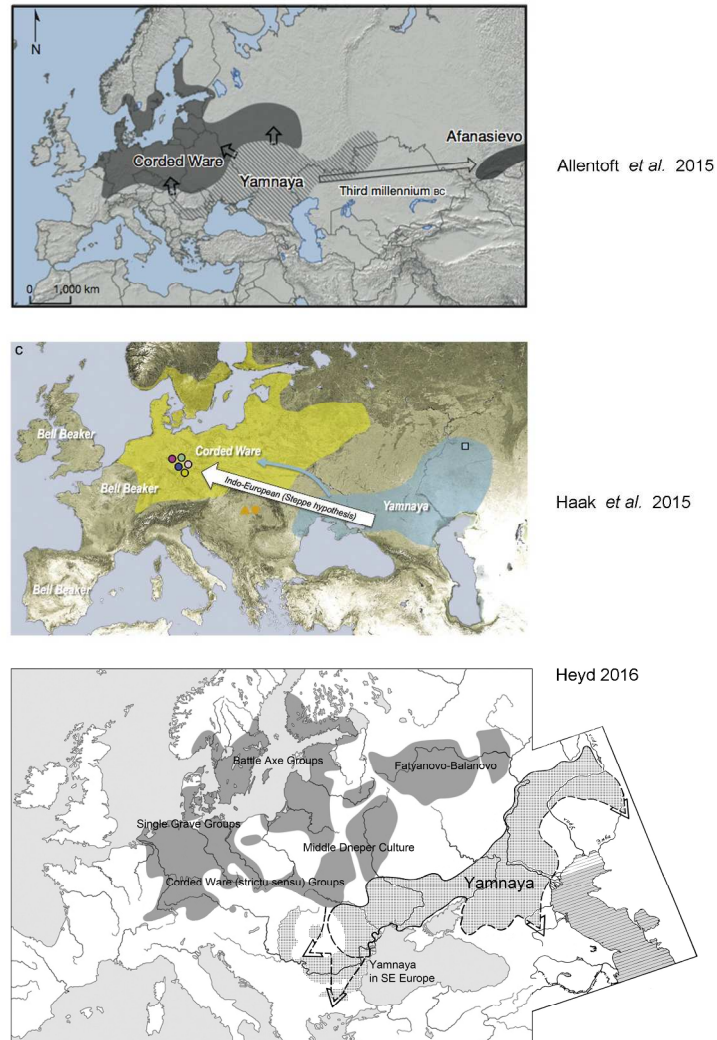


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